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SYNOPSIS OF THE NORTH AMERICAN SPECIES OF XYLARIA AND PORONIA.

BY J. B. ELLIS AND B. M. EVERHART.

(Continued from page 102.)

23. Xylaria carpophila (Pers.) Obs. Myc., I, 19. On decaying beech nuts. Carolina (Schw. & Rav.), Pennsylvania (Everhart.)

Stroma simple, flexuous, filiform, about one inch high and one millim. thick, round or a little spatulate, much flattened or sometimes forked at the apex, white at first, becoming nearly black, fertile club thicker and mostly shorter than the stipe, which is more or less villose; perithecia tuberculose-prominent, much as in *X. filiformis*, apex of the club sterile; asci cylindrical, pedicellate, spore-bearing part about 75 *u* long and six *u* wide; sporidia obliquely uniseriate, brown, inæquilateral, obtuse, 12—16 x 4—5 *u*.

b. Capitulum furcate or divided.

24. Xylaria cornu-damæ, Schw. Syn. N. Am., 1,163. On old logs partly buried in the ground. Bethlehem, Pa., (Schw.), Carolina (Ravenel.)

Suberose, quite black, rather stout, subradicate, variously bent; black-flocculose below, compressed and dilated and furcate-branched at the apex, the end of the branches mostly abruptly acuminate, resembling the horns of a deer. In the young plant the upper part is cinereous-squamose, elsewhere covered with an extremely short, black tomentum; perithecia rather large, somewhat prominent; ostiola obtuse, short-cylindrical; sporidia 15—20 *u* long, curved and narrow.

The foregoing is taken from Schw. Syn. N. Am. and Saccardo's Sylloge. The specimens in Rav. Car., I, 45, are quite simple (without any branches), linear clavate, 2—3 inches high, stem 1—1½ inches, club 1—1½ inches and about four millim. thick, probably considerably thicker when fresh; perithecia covering the surface of the club, somewhat prominent, three fourths millim.; asci long (150 *u*) and narrow; sporidia uniseriate, oblong-fusoid, brown, slightly curved, ends often acute, 15—20 x 4—5 *u*. Specimens collected in West Chester, Pa., are some of them simple and undivided like the Carolina specimens, others have the apices of the clubs divided into 2—3 short branches, and in others again there are two or three distinct clubs arising from the same stem, erect and parallel. The color is at first white, becoming black at maturity. The stem, both in the Carolina and Pennsylvania specimens, is nearly or quite smooth above, but the rooting base is covered with a ferruginous tomentum (which may perhaps have been black in the fresh specimen.)

25. XYLARIA HYPOXYLON (Linn.) Grev. Flor. Ed., p. 355. Nits. Pyr. Germ., p. 5. *Clavaria Hypoxylon*, Linn. Fl. Suec., Ed. II, p. 457. *Sphæria Hypoxylon*, Pers. Obs. Myc. I, p. 20. On decaying wood and bark, common throughout.

Stroma erect, compressed, dilated and variously divided and branched above, more rarely round and simple; stem covered with a black, hirsuto-tomentose coat; perithecia ovate-globose, prominent, investing and roughening the upper part of the stroma, but leaving the tips of the branches sterile, asci cylindrical, 8-spored, on oblong pedicels, spore-bearing part 65—75 *u* long; sporidia navicular-ellipsoid, inæquilateral, obtuse, 10—12 x 3½—5 *u* (12–14 x 5–6 *u*, Sacc.) As might be expected in a species having so wide a range, many different forms occur. Around Newfield, where it is very common on decaying stumps, railroad ties and pieces of wood decaying on the ground, it is usually found about one inch high, generally divided a little above the middle into 2—3 somewhat spreading branches. The hymenial surface is at first whitened by the minute, subfusoid conidia. Oftener than otherwise, the plants dry up in this conidial stage and remain permanently white (the tips of the branches having a faint rosy tint) without ever reaching the ascigerous state. The same observation applies to the West Chester specimens, except that they seem to be generally a little larger. A dwarf form has been found at Newfield on an old oak log, in which the stem is only from ½—1 cm. high and the fertile head about 2 x 1 millim., with only a very short, obtusely-pointed, sterile apex. The fruit and other characters are the same as in the usual form. The dwarf form must come very near the variety *cupressiformis*, Pers., if not the same. Specimens from British Columbia, sent by Prof. John Macoun, of the Canadian Geol. and Nat. Hist. survey, are 5—8 cm. high, with the stem distinctly rooting, 2—3 millim. thick and the fertile part flattened and dichotomously divided into 3—6 short (one half cm.), acute lobes or branches; some of the specimens, however, were entirely simple. In all these different forms, there is hardly any appreciable variation in the size or shape of the sporidia, which average about 10 x 4 *u*.

26. XYLARIA SUBTERRANEA, Schw. Journ. Acad. Nat. Sci., Phil., Vol. V, tab. 1, fig. 3; Syn. N. Am., No. 1,162.

Stroma filiform (3—6 inches long), simple or branched, dark brown or more or less hirsute-tomentose below, becoming finally nearly smooth; perithecia 250—300 *u* in diameter, depressed-globose, with a short, acute ostiolum, investing the upper half of the stroma, except the paler, sterile apex; asci long and narrow, with a slender, pedicellate base (spore-bearing part about 80 *u* long); sporidia uniseriate, oblong-navicular or oblong-fusoid, brown, rather obtuse, slightly curved, 12—14 x 4 *u*. The matrix is invested with a slimy membrane, from which the stipes arise and to which their appressed bases are often attached for the distance of an inch or more before beginning their free ærial growth. The thickness of the stroma at the base is 2—3 millim., gradually tapering to the apex except where thickened by the investing layer of perithecia. First found by Dr. Torrey on decaying timbers in the mines in northern New Jersey, and afterward by Schweinitz growing from the decaying wood of an old cistern at Bethlehem, Pa. The specimens distributed in N. A. F., 771, were found by Mr. Eugene A. Rau, near the Schweinitzian locality, on an old wooden pump standing in a limestone spring.

27. XYLARIA ACUTA, Pk. 25th Rep. N. Y. State Mus., p. 101.

"Plant gregarious or subcæspitose, 1—1½ in. high; club cylindrical or subfusiform, generally with a sterile, acute apex, blackish-brown, central substance white, with a radiating structure, stem involved in a dense, purplish, mucedinous tomentum, which causes it to appear bulbous, perithecia globose, black; spores uniceriate, elliptical, sometimes slightly curved, colored, .0006—0007 in. long (15—17*u*). On mossy, decaying logs in woods. Greig. September. This species is related to *X. digitata*, from which it differs in its less cæspitose habit and in the character of the stem and central substance. According to Fries, *X. digitata* has a simple, central pith; in this species, the central pith is radiating, as in *X. polymorpha*."

c. Capitulum subglobose.

28. XYLARIA PEDUNCULATA (Dicks.) Fr. Summ. Veg. Scan., p. 382; Nitsch. Pyr. Germ., p. 6; *Sphæria pedunculata*, Dicks., Crypt. Brit., IV, p. 27.

Stroma rather stout, flexuous, dark brown, simple or more rarely sparingly branched, cinereous at first; fertile club thickened, subglobose, roughened by the prominent perithecia, apex acute and sterile; asci cylindrical, briefly pedicellate, 8-spored; sporidia broadly ovate, very obtuse, straight, obliquely uniseriate, dark brown, becoming nearly black, surrounded by a thick, mucose, hyaline coat, 40 x 20 *u*. The habit given in Sylloge is on wet ground where manure has lain, in France, Britain and Missouri. The specimens in Plowright's Spæriacei Britanici, 216 (the only ones we have seen), have the stroma simple, about five millim. high and one millim. thick at the base, attenuated slightly above to the conico-globose head, which is about 1½ millim. high, with a short, mucronate, sterile tip and about 1½ millim. broad; asci (spore-bearing part) 114—125 x 18 *u*; sporidia almond-shaped, subhyaline at first, becoming opaque, 18—20 x 15 *u*, surrounded at first by a hyaline coat. Plowright's specimens are on a rabbit's dung. It will be noticed that the sporidia are exactly like those of a *Sordaria*. The difference between the measurements of the sporidia given in Sylloge (40 x 20 *u*) and ours is remarkable. This discrepancy does not seem to be due to the shrinking of the sporidia, which were apparently in their normal state, nor have we ever observed that the sporidia of any of the ascigerous fungi loose much or any of their original size in said specimens.

Since sending off the copy of "Synopsis of Xylaria," we have received from Prof. A. P. Morgan the two following species collected by him at Preston, Ohio, and determined by Dr. M. C. Cooke.

29. XYLARIA CASTOREA, Berk.—Fl. New Zealand, p. 204. The description in Sylloge, I, p. 329, is as follows: Stipe short at first, spongy-velutinous, finally bare, rugose; club obtuse, ovate or subelliptical, much compressed, minutely areolate, roughened by the prominent ostiola; asci narrow; sporidia ovoid-oblong, fulignious, 10 *u* long. On rotten wood. New Zealand. Stroma 2—3 cm. high, 12—16 millim. thick. The Ohio specimens are cæspitose and arise from a spongy, sterile base similar to that of *X. corniformis*, only larger. They have the asci (spore-bearing part) 50—55 *u* long; sporidia uniseriate, opaque, inæquilateral-elliptical, 8—9 x 4—4½ *u*. Judging from these specimens, the only definite characters separating *X. castorea* from *X. corniformis* are the cæspitose growth and compressed clubs of the former. The asci and sporidia are the same in both and the general appearance is similar.

XYLARIA CONOCEPHALA, B. & C.—Journ. Linn. Soc., X, p. 379. The description given is as follows: "Maxima, cæspitosa, e basi obtusa conica, umbrina, rimulosa, exsiccatione hic illic contracta; ostiolis sparsis prominulis; stipite brevi longitudinaliter sulcato-rugoso. On dead wood. Stem one half an inch, head 3½ high, 1¼ thick; sporidia cymbiform, .0008—.0006 inch long." In the Ohio specimens, the stroma is cæspitose and branched from the base, dividing into seven or eight elongated-clavate, erect branches, about three inches high and one cm. thick (in the dry state). There is no distinct stem, except the irregular-shaped mass formed by the connate bases of the branching stroma, which is white and spongy within. The perithecia are subovate and nearly one millim. in their longest diameter and extend down on the common base; ostiola large, subconic; asci (spore-bearing part) 100—112 *u* long; sporidia uniseriate, navicular, opaque, 20—22 x 5 *u*.

PORONIA, Willd. Flor. Berol. Prod., p. 400.

Stroma carnose-suberose, at first clavate or obconic, becoming cup-shaped, stipitate or sessile; perithecia immersed in the upper discoid surface of the stroma, membranaceo-carbonaceous, black; asci cylindrical, 8-spored; sporidia ellipsoid, brown, fimicolous.

1. PORONIA PUNCTATA (Linn.) Fr. Summ. Veg. Scand., p. 382; Nitsch. Pyr, Germ., p. 16; *Peziza punctata*, Linn., Fl. Suec., p. 458; *Sphæria Poronia*, Pers. Syn., p. 15.

Stroma erect, simple, obconic or clavate at first, soon opened above and cup-shaped, with the exposed disk white, finally often expanded and flattened, and nearly sessile. ½—1 cm. across; disk at first clothed and whitened by the minute, globose conidia, finally black-punctate from the projecting black ostiola of the subjacent perithecia; asci cylindrical, briefly pedicellate, 125–150 x 16–18 *u*; sporidia uniseriate, elliptical, with the ends rounded or more or less acute, surrounded at first with a hyaline coat soon brown or opaque, 17—25 x 10—14 *u*. We have fine specimens of this species from Prof. F. W. Cragin, of Topeka, Kansas, and also specimens from Colorado, communicated by Mr. E. A. Rau. Habitat on horse dung.

2. **Poronia Oedipus**, Mont. Syll. Plant Crypt., p. 209; Nits. Pyr. Germ., p. 20. On dung. Alabama (Peters), Texas (C. Wright).

Stroma simple or branched, erect, dark brown, becoming glabrous, striate when dry, clavate-thickened at the base and attenuated above to the apex, which is expanded into a cup-shaped disk, black externally, white within and black-punctate from the projecting ostiola, as in the preceding species; asci subcylindrical, very briefly pedicellate, 8-spored, 120 x 24 *u*, pseudoparaphyses very long, stout, filiform, septate; sporidia uniserate or subbiserate, ovate, straight, dark, surrounded by a thick, hyaline coat at first, 28—30 x 16 *u*. Specimens collected in Cuba by Wright and sent us by Prof. Farlow have the stems subconnate at base, about three cm. high and two millim. thick at base, the terminal disk about three millim. broad.

ADDITIONS TO HYPOCREACEÆ.

BY J. B. ELLIS AND B. M. EVERHART.

Cordyceps Spingum, Tul.—Sel. Carp. III, p. 12. (*Isaria Sphingum*, Schw., Syn. Car., 1298 [conidia.]) On a dead larva in its cocoon, attached to a rotten limb lying on the ground in the swamp. Newfield, N. J., Aug. 7, 1887. Stromata numerous, about thirty in the single specimen found, thread-like, about five cm. high and rather less than one millim. thick, cinereous, nearly smooth and glabrous or slightly white-farinose-tomentose, bulbous at the base and more or less undulate and bent, especially below and within the cocoon, which they seem to have penetrated with some difficulty; perithecia superficial, cylindric-conic, 200—225 *u* high, 125—150 *u* thick, rounded above, chestnut color; ostiolum not prominent; asci linear-lanceolate, 150—200 x 6—7 *u* when young with a depressed, conical tip about four *u* wide; sporidia filiform, nucleate, about as long as the asci and about two *u* wide, probably finally separating into joints or segments. The larva from which the fungus grows is about three cm. long and one half cm. thick, and the stipes or stromata arise from all the segments of the body. Some of the stromata were sparingly branched above.

[In Tulasne's figure the fungus is represented as growing from the perfect insect, and the perithecia are said to be of a pale red color ("pallide rubentia"). From these and other considerations, I was at first inclined to consider this as a new species, but my colleague, Mr. Everhart, having carefully examined the specimen, assured me that it could not be specifically distinct, and I am now convinced that he is right.—J. B. E.]

Cordyceps herculea, Schw.—A fine specimen of this species has been sent from Ohio by Prof. A. P. Morgan. When fresh it was about three inches high and half an inch thick, growing from some dead larva of considerable size. The fertile head, which occupies about an inch of the upper part of the stem, leaving a short, rather obtuse, sterile tip, is of a light yellow color and roughened by the somewhat prominent,